

Nama:..... Tingkatan :.....

4541/3  
**CHEMISTRY**  
**Kertas 3**  
**Ogos**  
**2010**  
 1 ½ jam



**BAHAGIAN PENGURUSAN  
 SEKOLAH BERASRAMA PENUH DAN SEKOLAH KLUSTER  
 KEMENTERIAN PELAJARAN MALAYSIA**

**PEPERIKSAAN PERCUBAAN  
 SIJIL PELAJARAN MALAYSIA 2010**

**CHEMISTRY**  
 Kertas 3

**Satu jam tiga puluh minit**

**JANGAN BUKA KERTAS SOALAN INI SEHINGGA DIBERITAHU**

1. *Tuliskan nama dan tingkatan pada ruang yang disediakan.*
2. *Calon dikehendaki membaca maklumat di halaman 2.*

<i>Untuk Kegunaan Pemeriksa</i>		
<b>Soalan</b>	<b>Markah Penuh</b>	<b>Markah Diperoleh</b>
1	21	
2	12	
3	17	
<b>JUMLAH</b>	50	

Kertas soalan ini mengandungi 9 halaman bercetak

**INFORMATION FOR CANDIDATES**

1. *This question paper consists of **three** questions. Answer **all** questions.*
2. *Write your answers for **Question 1** and **Question 2** in the spaces provided in the question paper..*
3. *Show your working. It may help you to get marks.*
4. *If you wish to cancel any answer, neatly cross out the answer.*
5. *The diagrams in the questions are not drawn to scale unless stated.*
6. *Marks allocated for each question or part question are shown in brackets.*
7. *The time suggested to answer **Question 1** and **Question 2** is **45 minutes** and **Question 3** is **45 minutes**.*
8. *You may use a non-programmable scientific calculator.*
9. *Hand in this question paper at the end of the examination.*

*Marks awarded:*

<b>Mark</b>	<b>Description</b>
3	Excellent : The best response
2	Satisfactory : An average response
1	Weak : An inaccurate response
0	No response <u>or</u> wrong response

1. Diagram 1.1 shows **three** sets, Set I, Set II and Set III, of the apparatus set-up for an experiment to compare the reactivity of alkali metals towards oxygen.

Rajah 1.1 menunjukkan **tiga** set, Set I, Set II, dan Set III, susunan radas bagi satu eksperimen untuk membandingkan reaktiviti logam alkali terhadap oksigen.

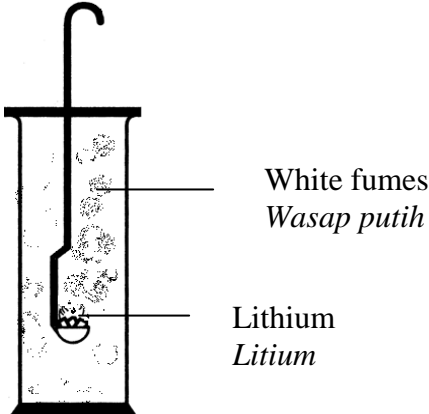
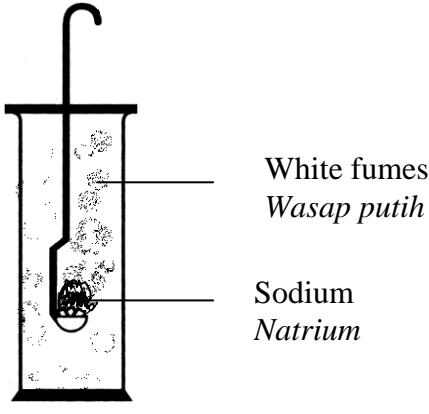
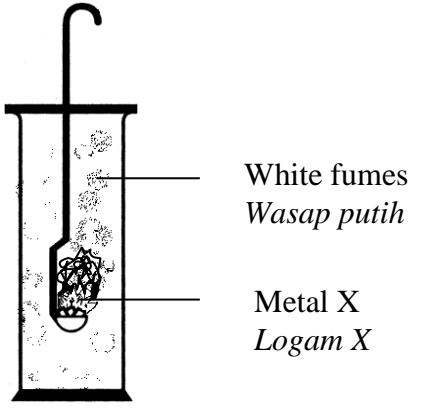
Set	Set-up of apparatus	Observation
I	 <p>White fumes <i>Wasap putih</i></p> <p>Lithium <i>Litium</i></p>	<p>Lithium burns slowly and produces white fumes</p> <p><i>Litium terbakar dengan perlahan dan menghasilkan wasap putih</i></p>
II	 <p>White fumes <i>Wasap putih</i></p> <p>Sodium <i>Natrium</i></p>	<p>Sodium burns vigorously and produces whites fumes.</p> <p><i>Natrium terbakar dengan cergas dan menghasilkan wasap putih.</i></p>
III	 <p>White fumes <i>Wasap putih</i></p> <p>Metal X <i>Logam X</i></p>	

Diagram 1.1  
Rajah 1.1

- (a) State **one** hypothesis for this experiment.  
*Nyatakan **satu** hipotesis bagi eksperimen ini.*

.....  
 .....  
 .....

[3 marks]  
 [3 markah]

- (b) Record the observation for Set III in Diagram 1.1.  
*Rekodkan pemerhatian bagi Set III dalam Rajah 1.1.*

[3 marks]  
 [3 markah]

- (c) Construct a table to record the observations for Set I, Set II and Set III.  
*Bina satu jadual untuk merekodkan pemerhatian bagi Set I, Set II dan Set III.*

[3 marks]  
 [3 markah]

- (d) Based on the observation in Set III, predict metal X.  
*Berdasarkan pemerhatian dalam Set III, ramalkan logam X.*

.....  
 [3 marks]  
 [3 markah]

- (e) Diagram 1.2 shows the pH meter readings when the metal oxides formed in Set I, Set II and Set III were dissolved in water.

*Rajah 1.2 menunjukkan bacaan meter pH apabila oksida logam yang terbentuk dalam Set I, Set II dan Set III dilarutkan dalam air.*

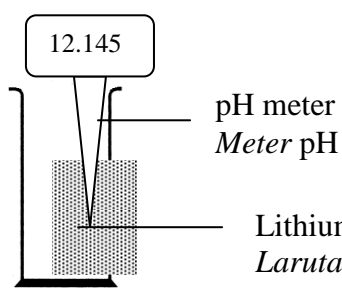
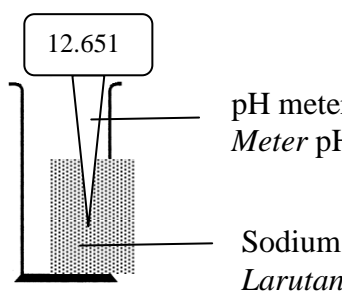
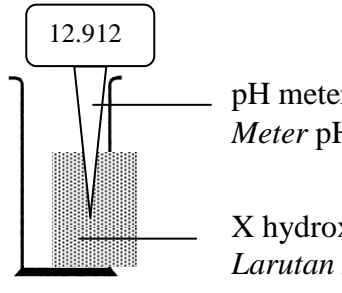
Set Set	Set-up of apparatus <i>Susunan Radas</i>
I	 <p>pH meter <i>Meter pH</i></p> <p>Lithium hydroxide solution <i>Larutan litium hidroksida</i></p>
II	 <p>pH meter <i>Meter pH</i></p> <p>Sodium hydroxide solution <i>Larutan natrium hidroksida</i></p>
III	 <p>pH meter <i>Meter pH</i></p> <p>X hydroxide solution <i>Larutan X hidroksida</i></p>

Diagram 1.2  
*Rajah 1.2*

- (f) Record the pH value to one decimal place for Set I, Set II and Set III.  
*Rekodkan nilai pH pada satu tempat perpuluhan bagi Set I, Set II dan Set III.*

Set I: .....

Set II: .....

Set III: .....

[3 marks]

- (g) Based on Diagram 1.2, complete the table below.  
*Berdasarkan Rajah 1.2, lengkapkan jadual di bawah.*

Manipulated variable: <i>Pemboleh ubah dimanipulasikan:</i> ..... ..... .....	Method to manipulate the variable: <i>Kaedah memanipulasikan pemboleh ubah:</i> ..... ..... .....
Responding variable: <i>Pemboleh ubah bergerak balas:</i> ..... ..... .....	How the variable is responding: <i>Bagaimana pemboleh ubah ini bergerak balas:</i> ..... ..... .....
Fixed variable: <i>Pemboleh ubah yang dimalarkan:</i> ..... ..... .....	Method to maintain the fixed variable: <i>Kaedah menetapkan pemboleh ubah dimalarkan:</i> ..... ..... .....

[6 marks]  
 [6 markah]

2. Table 1 shows the set-up of apparatus and the observations of an experiment to investigate the effect of metal on rusting of iron, when it is in contact with other metals. Potassium hexacyanoferrate (III) is used to test the presence of iron (II) ion in the solution and change the colour to dark blue, while the phenolphthalein is to test the presence of hydroxide ion and the colour change to pink

*Jadual 1 menunjukkan susunan radas dan pemerhatian bagi eksperimen untuk mengkaji kesan logam lain terhadap pengurangan besi apabila bersentuhan dengan logam lain. Kalium heksasianoferrat(III) digunakan untuk mengesan kehadiran ion ferum(II) dalam larutan dan warna berubah menjadi biru gelap, manakala fenolftalein mengesan kehadiran ion hidroksida dan warna menjadi merah jambu.*



Test Tube <i>Tabung uji</i>	Set-up of apparatus <i>Susunan radas</i>	Observations <i>Pemerhatian</i>
A	 <p>Gelatin containing potassium hexacyanoferrate (III) and phenolphthalein</p> <p>Iron nail <i>Paku besi</i></p> <p>Magnesium <i>Magnesiumium</i></p>	<p>Pink colouration <i>Warna merah jambu</i></p>
B	 <p>Gelatin containing potassium hexacyanoferrate (III) and phenolphthalein</p> <p>Iron nail <i>Paku besi</i></p> <p>Copper <i>Kuprum</i></p>	<p>Dark blue coloration <i>Warna biru gelap</i></p>

Table 1  
*Jadual 1*

- (a) State **one** inference for this experiment.  
*Nyatakan **satu** inferens bagi eksperimen ini.*

.....

.....

[3 marks]  
[3 markah]

- (b) State the operational definition for the rusting of iron.  
*Nyatakan definisi secara operasi bagi pengkaratan besi.*

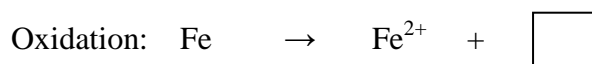
.....  
 .....  
 .....

[3 marks]

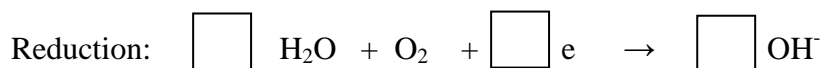
[3 markah]

- (c) Complete the following half-equations for oxidation and reduction processes that occur in this experiment.

*Lengkapkan persamaan setengah bagi proses pengoksidaan dan penurunan yang berlaku dalam eksperimen ini.*



*Pengoksidaan:*



*Penurunan:*

[3 marks]

[3 markah]

- (d) The following is the list of metals that can be used to coil the iron nail.

Zinc	Tin
<i>Zink</i>	<i>Stanium</i>
Silver	Aluminium
<i>Argentum</i>	<i>Aluminium</i>

Classify these metals into metals that can make iron nail to rust and metals that prevent iron nail to rust.

*Kelaskan logam-logam ini kepada logam yang boleh menyebabkan paku besi berkarat dan logam yang menghalang paku besi berkarat.*

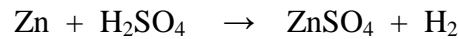
[3 marks]

[3 markah]

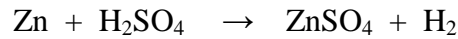


3.

The reaction between zinc and sulphuric acid will produce zinc sulphate and hydrogen gas. The chemical equation for the reaction is shown below:



*Tindak balas antara zink dan asid sulfuric menghasilkan zink sulfat dan gas hydrogen. Persamaan kimia bagi tindak balas adalah seperti berikut:*



Referring to the information above, plan a laboratory experiment to investigate the effect of size of zinc on the rate of reaction.

Your planning should include the following aspects:

*Merujuk kepada maklumat di atas, rancang satu eksperimen makmal untuk menentukan kesan saiz zink ke atas kadar tindak balas.*

*Perancangan anda hendaklah mengandungi aspek-aspek berikut:*

- (a) Problem statement  
*Pernyataan masalah*
- (b) Hypothesis  
*Hipotesis*
- (c) All the variables  
*Semua pemboleh ubah*
- (d) List of materials and apparatus  
*Senarai bahan dan radas*
- (e) Procedure  
*Prosedur*
- (f) Tabulation of data  
*Penjadualan data*

[17 marks]  
[17 markah]

**END OF QUESTION PAPER**  
**KERTAS SOALAN TAMAT**